CLAIMS

1. An integrated optical switch for coupling an input optical fiber to an output optical fiber, comprising:

a substrate;

a first waveguide formed on the substrate;

a second waveguide formed on the substrate;

an input port located at one end of the second waveguide for operatively receiving the input optical fiber;

an output port located at the other end of the second waveguide for operatively receiving the output optical fiber;

a first control electrode positioned proximate the first waveguide;

a second control electrode positioned proximate the second waveguide;

wherein the second waveguide is substantially straight; and,

wherein the first waveguide has a bend proximate to the second waveguide such that a directional coupler is formed.

2. The optical switch of claim 1 wherein the substrate comprises lithium niobate.

3. The optical switch of claim 1 wherein the substrate comprises lithium tantalate.

4. The optical switch of claim 1 wherein the first and second waveguides comprise titanium diffused into the substrate.

5. The optical switch of claim 1 wherein the first and second waveguides are formed by a proton exchange process.

6. A directional coupler for coupling an input optical fiber to an output optical fiber, comprising:

a substrate;

a first waveguide formed on the substrate, wherein the first waveguide is substantially straight;

a second waveguide formed on the substrate, wherein the second waveguide has a bend proximate to the first waveguide such that the first and second waveguides evanescently couple;

an input port located at one end of the first waveguide for operatively receiving the input optical fiber;

an output port located at the other end of the first waveguide for operatively receiving the output optical fiber;

a first control electrode positioned proximate the first waveguide; and,

a second control electrode positioned proximate the second waveguide.

7. The directional coupler of claim 6 wherein the first and second waveguides are formed between the first and second control electrodes.

8. The directional coupler of claim 6 wherein the second control electrode is formed proximate to the bend in the second waveguide.

9. The directional coupler of claim 8 wherein the first and second waveguides are formed between the first and second control electrodes.

10. The directional coupler of claim 6 wherein the bend is in closer proximity to the first waveguide than is the remainder of the second waveguide.

11. The directional coupler of claim 6 wherein the substrate comprises lithium niobate.

12. The directional coupler of claim 6 wherein the substrate comprises lithium tantalate.

13. The directional coupler of claim 6 wherein the first and second waveguides comprise titanium diffused into the substrate.

14. The directional coupler of claim 6 wherein the first and second waveguides are formed by a proton exchange process.

15. An optical switch comprising:

a substrate;

a first waveguide formed on the substrate, wherein the first waveguide is substantially straight;

a second waveguide formed on the substrate, wherein the second waveguide has a bend such that the bend of the second waveguide is proximate to the first waveguide;

an input port located at one end of the first waveguide;

an output port located at the other end of the first waveguide;

a first control electrode formed on the substrate and located proximate to the first waveguide; and,

a second control electrode positioned formed on the substrate and located proximate the second waveguide.

16. The directional coupler of claim 15 wherein the first and second waveguides are formed between the first and second control electrodes.

17. The directional coupler of claim 15 wherein the second control electrode is formed proximate to the bend in the second waveguide.

18. The directional coupler of claim 17 wherein the first and second waveguides are formed between the first and second control electrodes.

19. The directional coupler of claim 15 wherein the bend is in closer proximity to the first waveguide than is the remainder of the second waveguide.

20. The directional coupler of claim 15 wherein the substrate comprises lithium niobate.

21. The directional coupler of claim 15 wherein the substrate comprises lithium tantalate.

22. The directional coupler of claim 15 wherein the first and second waveguides comprise titanium diffused into the substrate.

23. The directional coupler of claim 15 wherein the first and second waveguides are formed by a proton exchange process.

24. The directional coupler of claim 15 wherein the bend comprises a C-shaped bend in the second waveguide, and wherein the C-shaped bend wraps around the second control electrode.

25. The directional coupler of claim 24 wherein the first and second waveguides are formed between the first and second control electrodes.

26. The directional coupler of claim 25 wherein the bend is in closer proximity to the first waveguide than is the remainder of the second waveguide.